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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/681,885	RAO, RAM R.
Office Action Summary	Examiner	Art Unit	
	James A. Fletcher	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 October 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-28</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-11 and 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated

by Greenwood (US PG Publication 20030198458).

Regarding claim 1, Greenwood discloses a method for digitally storing a

received program, comprising:

- storing the received program as a first digital copy having a first quality level

  (Paragraph 0018 "new content in the form of a video program is received by

  the system");

- converting the first digital format into a second digital copy having a second

  quality level of lesser quality than the first quality level (Paragraph 0017 "A

  storage management system 200 in FIG. 2 selectively reduces a quality level

  of previously stored content to free storage space for new content");

- storing the second digital copy (paragraph 0019 "Once it is determined that

  additional storage space is required for a currently identified or, optionally, yet

  to be identified video, and a video for quality reduction is identified, a decoder

  230 and encoder 235 are used to convert the quality of the video and restore

  it to storage"); and

- applying a retention policy which requires at least deletion of selected ones of the stored first and second digital copies (Paragraph 0020 "a decoder 230 and encoder 235 are used to convert the quality of the video and restore it to storage. The higher quality copy of the video is then deleted from storage").

Regarding claim 2, Greenwood discloses a method further comprising:

- receiving a request to schedule a recording of the program (Paragraph 0002 "Recording systems for recording content, such as video programs received in the home are becoming more prevalent. Such systems allow a user in the home to select programs to record for later playback.");

- determining a recording quality and a longevity for the program (Paragraph 0018 "A determining module 215 monitors storage levels in a storage 220 to determine if there is sufficient storage space for the video program. In some embodiments, the video program indicates how much storage space it requires."); and

- associating the recording quality and longevity with the program (Paragraph 0019 "If the determining module determines that there is insufficient storage space available, an identifier module is used to determine which videos qualify for quality reduction. This is based on the length of time a video has been stored, frequency of viewing of the video, when it was last viewed, or based on a user defined priority for the video"); wherein

- applying the retention policy is performed based at least in part on the associated desired longevity (Paragraph 0019 "If the determining module

determines that there is insufficient storage space available, an identifier

module is used to determine which videos qualify for quality reduction. This is

based on the length of time a video has been stored, frequency of viewing of

the video, when it was last viewed, or based on a user defined priority for the

video").

Regarding claim 3, Greenwood discloses a method wherein the recording

quality comprises high, medium and low quality (Paragraph 0022 "In one embodiment,

three levels of content or video program quality levels are provided; low, medium and

high").

Regarding claim 4, Greenwood discloses a method wherein determining the

quality and longevity comprises a selected one of:

- utilizing a default quality and longevity or prompting for the desired quality and

  longevity (Paragraph 0019 "If the determining module determines that there is

  insufficient storage space available, an identifier module is used to determine

  which videos qualify for quality reduction. This is based on the length of time

  a video has been stored, frequency of viewing of the video, when it was last

  viewed, or based on a user defined priority for the video").

Regarding claim 5, Greenwood discloses a method wherein longevity

comprises long, medium, and temporary, and wherein applying the retention policy

further comprises comparing associated quality settings and longevity to determine

which stored copy of a program is to be deleted (Paragraph 0019 "Users may specify

one of various rating systems to indicate the importance of keeping each video, such as

a scale of 1, 2 or 3, with 1 being videos that are never converted to lower quality, and 3

being the videos that are first converted to lower quality as needed").

Regarding claim 6, Greenwood discloses a method comprising:

- receiving a request to schedule a recording of the program, the request

  having an associated quality to utilize for recording the program (Paragraph

  0002 "Recording systems for recording content, such as video programs

  received in the home are becoming more prevalent. Such systems allow a

  user in the home to select programs to record for later playback");

- inferring a longevity for the recording based on the associated quality;

  periodically, during the inferred longevity, selecting a stored copy of the

  program and determining a lesser quality for the stored copy based at least in

  part on how long of the inferred longevity the stored copy has been stored

  (Paragraph 0023 "If the space available is less than a threshold, T, a next low

  priority video program is identified, along with a desired compression or

  quality level. T is derived from the length of time a video has been stored,

  frequency of viewing of the video, when it was last viewed, or based on a user

  defined priority for the video"); and

- degrading the stored copy of the program in accordance with the lesser

  quality (Paragraph 0034 "the next low priority video is converted to lower

  quality, normally corresponding to a higher compression rate and therefore

  less storage").

Regarding claim 7, Greenwood discloses a method comprising determining a bitrate and an encoding format for the first and second digital copies, wherein the first and second quality levels are determined based at least in part on the bitrate and the encoding format utilized (Paragraph 0022 "The low level requires the least amount of storage, while the high quality level provides the highest quality and also requires the most amount of storage, as it is compressed the least. One such compression scheme is well known and set forth in MPEG/2 standards for video compression. Further compression schemes will also operate with the present invention").

Regarding claim 8, Greenwood discloses a method wherein the first and second quality levels are determined based at least in part on a bitrate utilized to encode the first and second digital copies (Paragraph 0022 "In one embodiment, three levels of content or video program quality levels are provided; low, medium and high. The low level requires the least amount of storage, while the high quality level provides the highest quality and also requires the most amount of storage, as it is compressed the least").

Regarding claim 9, Greenwood discloses a method wherein the first and second quality levels are determined based at least in part on an encoding format utilized to encode the first and second digital copies (Paragraph 0020 "Different known conversion routines may require varying amounts of available storage to perform a conversion").

Regarding claims 10 and 11, Greenwood discloses a method further comprising:

- converting the first digital format into a third digital format having a third quality level of lesser quality than the second quality level (Paragraph 0023 "If the space available is less than a threshold, T, a next low priority video program is identified, along with a desired compression or quality level" and Paragraph 0022 "In one embodiment, three levels of content or video program quality levels are provided; low, medium and high"); and

- storing the third digital format (Paragraph 0024 "the next low priority video is converted to lower quality, normally corresponding to a higher compression rate and therefore less storage");

- deleting selected ones of the stored first, second, and third digital formats in accordance with the retention policy (Paragraph 0019 "Users may specify one of various rating systems to indicate the importance of keeping each video, such as a scale of 1, 2 or 3, with 1 being videos that are never converted to lower quality, and 3 being the videos that are first converted to lower quality as needed." and Paragraph 0023 "If the space available is less than a threshold, T, a next low priority video program is identified, along with a desired compression or quality level. T is derived from the length of time a video has been stored, frequency of viewing of the video, when it was last viewed, or based on a user defined priority for the video").

Regarding claim 19, Greenwood discloses a PVR, comprising:

- a video encoder operable to encode an input signal corresponding to a program into a higher quality copy of the program for storage in a storage

(Paragraph 0018 "210, new content in the form of a video program is received

by the system" and Paragraph 0022 "three levels of content or video program

quality levels are provided; low, medium and high");

- a transcoder operable to convert the higher quality copy of the program into at

  least one lesser quality copy of the program for storage in the storage

  (Paragraph 0017 "When storage in the system is becoming full, selected

  content is converted to a lower quality based at least one of priority or age");

  and

- a storage manager operable to inspect the polices within a policy store

  associated with the storage manager and to apply selected ones of the

  policies to copies of the program so as to manage consumption of the storage

  (Paragraph 0019 "If the determining module determines that there is

  insufficient storage space available, an identifier module is used to determine

  which videos qualify for quality reduction").

Regarding claim 20, Greenwood discloses a PVR, wherein the transcoder

stores the higher and at least one lesser quality copies of the program as components

of a scalable bitstream (Paragraph 0024 "the next low priority video is converted to

lower quality, normally corresponding to a higher compression rate and therefore less

storage. Such conversion is performed in a computing background to minimize

interference with programs being currently viewed. In further embodiments, conversion

is performed when the system is not in use, or upon initiation of the user. In yet further

embodiments, a user directly identifies programs to be converted, and the level of quality desired").

Regarding claim 21, Greenwood discloses a PVR, wherein applying a selected one of the policies by the storage manager includes the storage manager deleting the higher quality copy of the program from the storage (Paragraph 0020 "a decoder 230 and encoder 235 are used to convert the quality of the video and restore it to storage. The higher quality copy of the video is then deleted from storage").

Regarding claim 22, Greenwood discloses a PVR comprising: a video decoder for use in conjunction with retrieving a best available copy of the program from the storage, the video decoder to convert the best available copy of the program into an output format suitable for presentation to a display (Paragraph 0020 "The decoder is also used to decode programs in storage 220, or programs received, to permit a display-I/O controller 240 to display the video programs on display 250.").

Regarding claim 23, Greenwood discloses an article comprising a machine-accessible media having associated data for digitally storing a received program (Paragraph 0014 "The entertainment system 110 comprises a processor 130 such as a microprocessor or other electronic circuitry capable of being programmed or executing program instructions stored on a memory 140"), wherein the data, when accessed, results in a machine performing:

- storing in a storage the received program as a first digital copy having a first quality level (Paragraph 0018 "new content in the form of a video program is received by the system");

- converting the first digital format into a second digital copy having a second quality level of lesser quality than the first quality level (Paragraph 0017 "A storage management system 200 in FIG. 2 selectively reduces a quality level of previously stored content to free storage space for new content");

- storing the second digital copy in the storage (paragraph 0019 "Once it is determined that additional storage space is required for a currently identified or, optionally, yet to be identified video, and a video for quality reduction is identified, a decoder 230 and encoder 235 are used to convert the quality of the video and restore it to storage"); and

- applying a retention policy which requires at least deletion of selected ones of the stored first and second digital copies (Paragraph 0020 "a decoder 230 and encoder 235 are used to convert the quality of the video and restore it to storage. The higher quality copy of the video is then deleted from storage").

Regarding claim 24, Greenwood discloses an article wherein the machine-accessible media further includes data, which when accessed, results in the machine performing:

- receiving a request to schedule a recording of the program (Paragraph 0002 "Recording systems for recording content, such as video programs received in the home are becoming more prevalent. Such systems allow a user in the home to select programs to record for later playback");

- determining a desired recording quality and a longevity for the program (Paragraph 0023 "If the space available is less than a threshold, T, a next low

priority video program is identified, along with a desired compression or

quality level. T is derived from the length of time a video has been stored,

frequency of viewing of the video, when it was last viewed, or based on a user

defined priority for the video"); and

- associating the quality and longevity with the program, wherein the data,

  which when executed applies the retention policy, further includes data for

  applying the retention policy based at least in part on the associated desired

  longevity (Paragraph 0019 "If the determining module determines that there is

  insufficient storage space available, an identifier module is used to determine

  which videos qualify for quality reduction. This is based on the length of time

  a video has been stored, frequency of viewing of the video, when it was last

  viewed, or based on a user defined priority for the video").

Regarding claim 25, Greenwood discloses an article wherein the machine-

accessible media further includes data, which when accessed, results in the machine

performing:

- determining a first bitrate for encoding the first digital copy (Paragraph 0022

  "The low level requires the least amount of storage, while the high quality

  level provides the highest quality and also requires the most amount of

  storage, as it is compressed the least. One such compression scheme is well

  known and set forth in MPEG/2 standards for video compression. Further

  compression schemes will also operate with the present invention"); and

- determining a second bitrate for encoding the second digital copy (Paragraph

   0024 "the next low priority video is converted to lower quality, normally

   corresponding to a higher compression rate and therefore less storage");

- wherein the data which when accessed results in storing the first and second

   digital copies with the first and second quality levels further includes data

   which when accessed results in determining the first and second quality

   levels respectively based at least in part on the first and second bitrates (Fig 4

   shows a Quality setting for the various digital copies in the storage.

   Paragraph 0022 discloses that quality is dependent on the amount of storage,

   which is itself dependent on the bitrate of the recording file).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 12-18 and 26-28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Moroney (6,532,593), and further in view of Greenwood.

Regarding claims 12 and 26, Moroney discloses a method and program for

digitally storing a received program, comprising:

- receiving a first program (Col 6, lines 52-54 "The terminal 400 receives compressed digital programming at a tuner 410, e.g., via a cable satellite or terrestrial feed");

- first converting the first program into a first higher quality copy and a first lower quality copy, and storing the first higher and lower quality copies in a storage (Col 6, lines 38 41 "the buffered data is transcoded based on a user input. The buffered data may be requantized using existing motion vectors and other parameters under an appropriate rate control scheme to achieve a new rate" and Col 6, lines 47-49 "the transcoded data is transferred, e.g., through a disk or tape interface, to a storage device to be stored for later playback by the user");

Moroney discloses an automatic determination of remaining storage space, as shown in Fig. 5(c), but is silent regarding an automatic determination of compression levels for incoming and existing programs.

Greenwood teaches the determination of likely insufficient space in the storage for storing a second higher quality copy for a second program (Paragraph 0005 "When storage in the system is becoming full, selected content is converted to a lower quality based at least one of priority or age"); and deletes at least one of the first higher quality copy and the first lower quality copy to make room within the storage for storing the second higher quality copy (Paragraph 0020 "The higher quality copy of the video is then deleted from storage").

As taught by Greenwood, deletion of redundant large files to make

room for new recording is well known, providing the end user with additional

storage without losing existing programs.

Therefore, it would have been obvious to one of ordinary skill in the art

at the time of the invention to modify Moroney in order to provide for

evaluation of storage space to select files to be deleted

Regarding claim 13, Moroney is silent regarding a retention policy.

Greenwood teaches a retention policy and recompresses or deletes programs

based on their usage under the policy (Paragraph 0019 "If the determining module

determines that there is insufficient storage space available, an identifier module is used

to determine which videos qualify for quality reduction. This is based on the length of

time a video has been stored, frequency of viewing of the video, when it was last

viewed, or based on a user defined priority for the video").

As taught by Greenwood, retention policies for storage of compressible files on

fixed capacity media is well known, providing the user with the ability to retain his

programming in spite of demands made on the capacity by new storage requests.

Therefore, it would have been obvious to modify Moroney in order to establish a

retention policy for compression and deletion of files on the storage media.

Regarding claims 14 and 15, Moroney discloses setting storage requirements

for incoming programs, but is silent regarding deletion of copies based on the

requirements of other files.

Greenwood teaches setting priorities for retention by the user (Paragraph 0028 "Multiple columns of information are provided to the user, such as a content column 415, priority column 420 and current and new quality level columns, 425 and 430 respectively. These columns provide users with the ability to select a video by use of a check box, or other common user interface construct, and to specify both a priority and a quality level for conversion"), establishing storage and retention requirements for specified files.

As taught by Greenwood, storage requirements of files affecting storage parameters of other files on a fixed-size media is well known, providing the user with the ability to retain his preferred programming in spite of demands made on the capacity by new storage requests.

Therefore, it would have been obvious to one of ordinary skill in the art to modify Moroney in order to set priorities for file retention.

Regarding claims 16 and 27, Moroney discloses a method comprising:

- receiving the second program (Col 6, lines 52-54 "The terminal 400 receives compressed digital programming at a tuner 410, e.g., via a cable satellite or terrestrial feed");

- second converting the second program into the second higher quality copy and a second lower quality copy (Col 6, lines 38 41 "the buffered data is transcoded based on a user input. The buffered data may be requantized using existing motion vectors and other parameters under an appropriate rate control scheme to achieve a new rate"); and

- storing the second higher and lower quality copies in the storage (Col 6, lines 47-49 "the transcoded data is transferred, e.g., through a disk or tape interface, to a storage device to be stored for later playback by the user").

Regarding claim 17, Moroney discloses a method comprising:

- determining a first quality level associated with the first program, wherein converting the first program into the first higher quality copy comprises encoding the first program with a bit rate determined based at least in part on the first quality level (Col 7, lines 66-67 "The user is then asked to select a record quality, e.g., high, medium, or low, or to exit the screen").

Regarding claims 18 and 28, Moroney is silent regarding storage policies.

Greenwood teaches the use of policies for retention of stored copies (Paragraph 0023 "Available storage is monitored at 310. If the space available is less than a threshold, T, a next low priority video program is identified, along with a desired compression or quality level. T is derived from the length of time a video has been stored, frequency of viewing of the video, when it was last viewed, or based on a user defined priority for the video"), and the alteration of stored programs in accord with the policy (Paragraph 0024 "the next low priority video is converted to lower quality, normally corresponding to a higher compression rate and therefore less storage").

As taught by Greenwood, retention policies can either reduce or eliminate the storage requirements of recordings deemed to be of lesser importance, freeing up storage for new storage requests.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Moroney to include a policy for program retention, and to apply that policy to stored programs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Fletcher whose telephone number is (571) 272-7377. The examiner can normally be reached on 7:45-5:45 M-Th, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAF
7 January 2008

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